IMUGENE

Developing Cancer Immunotherapies

ASX: IMU

Our mission is to develop transformative cancer medicines to improve patients' lives and to establish value and trust with our stakeholders.

Developing Cancer Immunotherapies

July 2023

Release authorised by the Managing Director and Chief Executive Officer Imugene Limited.

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IMMUNOTHERAPY UNLEASHES THE IMMUNE SYSTEM TO FIGHT CANCER

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Cellular Therapy	Transfer of human cells to find and fight cancer (CAR-T) or replace diseased cells
Immunomodulators	Medications that regulate and boost part of the immune system (ex, immune checkpoint inhibitors)
Oncolytic Viruses	Modified viruses that infect and kill cancer cells but do not harm healthy cells
Monoclonal Antibodies	Synthetic proteins that bind a specific part of a cancer cell to block or target for destruction by immune cells
Cancer Vaccines	Medicines that train the immune system to recognize and destroy cancer cells

https://www.cancer.gov/about-cancer/treatment/types/immunotherapy; https://www.uchicagomedicine.org/cancer/types-treatments/immunotherapy

INVESTMENT HIGHLIGHTS

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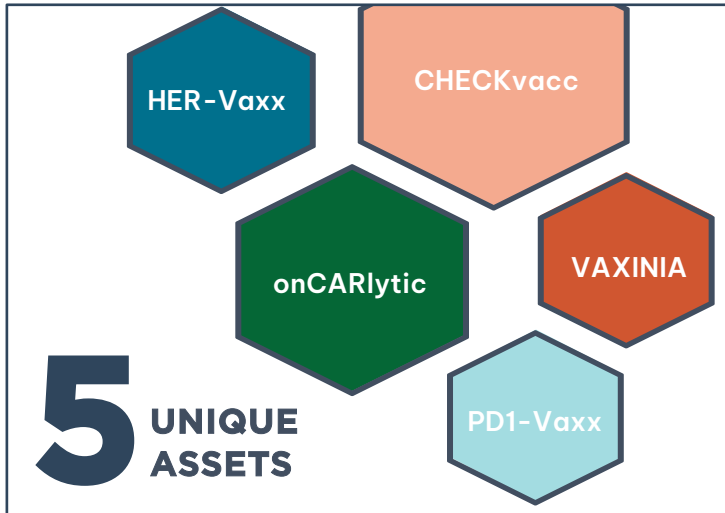
MARKET CAPITALISATION 19 July 2023 — A$674M / US$449M

CASH AS OF 31 March 2023 — A$152M / US$103M



5 UNIQUE ASSETS

*Multiple potential platform targets: CF33-CD20, LAG3-Vaxx, CTLA4-Vaxx, TIGIT-Vaxx, PDL1-Vaxx, TIM3-Vaxx

CF33 Oncolytic Virus | onCARlytics | B-Cell Immunotherapies

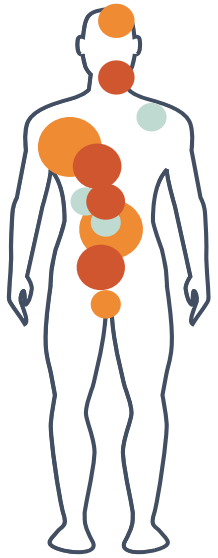
3 PLATFORM TECHNOLOGIES

Celularity | Eureka | Arovella

3 SCIENTIFIC COLLABORATIONS

DISEASE AREAS

- Breast (TNBC)
- Lung (NSCLC)
- Gastric
- Gastroesophageal
- Colorectal (CRC)
- Melanoma
- Head and Neck
- Hepatocellular
- Pancreatic
- Glioblastoma (GBM)



9 CLINICAL STUDIES

HERIZON: Ph1b/2 First line Gastric Cancer
IMPRINTER: Ph1 NSCLC (FDA IND)
CHECKvacc COH IST: Ph1 TNBC (FDA IND)
neoHERIZON: Ph 2 Neoadjuvant Gastric Cancer
nextHERIZON: Ph2 Metastatic Gastric Cancer (FDA IND)
MAST: Ph1 Solid tumours (FDA IND)
DOMINICA: Ph1 TNBC (FDA IND)
onCARlytics: Ph1 Solid tumours (FDA IND)
neoPolem IST: Ph1 CRC

2 SUPPLY AGREEMENTS

Merck KGaA/Pfizer | Roche

THREE UNIQUE PLATFORMS MAXIMIZE OPPORTUNITIES IN CANCER

Treatments that can be combined with and enhance outcomes of existing standards of care

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onCARlytics	CHECKvacc	VAXINIA	HER-Vaxx	PD1-Vaxx
PCT patent filed in major territories and expires in 2038	PCT patent filed in major territories and expires in 2037		PCT patent filed in major territories and expires in 2036 and 2040	

PROFESSOR YUMAN FONG M.D

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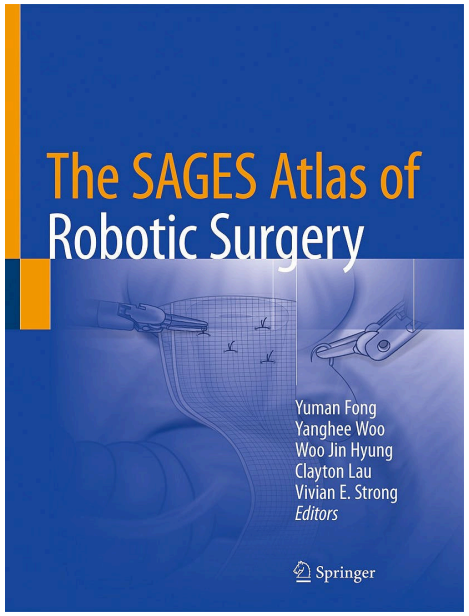
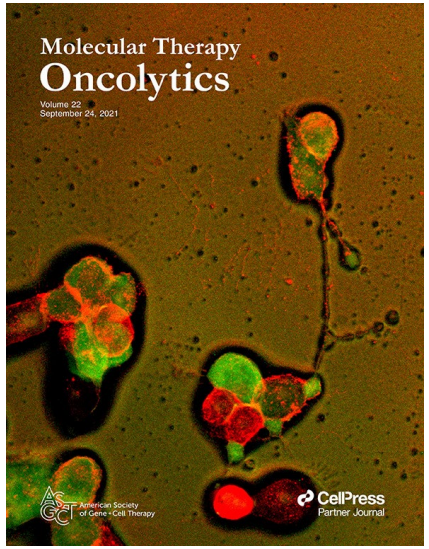
City of Hope





- Chairman of the Department of Surgery, City of Hope Cancer Center
- Clinical specialty: open and robotic surgeries to remove liver cancer
- Developed many new surgical techniques and instruments for human use
- Led research efforts to use genetically modified viruses to destroy cancer cells.
- Clinical life-time achievement award from the Society for Surgery of the Alimentary Tract (SSAT)
- Scientific life-time achievement award from the American Surgical Association (ASA)
- Written and edited >1000 scholarly articles as well as 22 textbooks, citations >90,000
- Inducted into American Institute of Medical and Biologic Engineering, and the National Academy of Medicine

ACADEMIC AND INDUSTRIAL COLLABORATION

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Importance of collaboration:

- Innovation and scientific rigor of academic universities
- Speed and regulatory rigor of industry

Helped Genentech with development of human growth hormone

Helped virus companies bring viruses to trials

- Neurovir, Medigene, Genelux

Held regulatory roles- including as chair of the Recombinant DNA Advisory Committee (RAC) of the NIH

Have been Editor-in-Chief of multiple journals including

- Founding Editor of Molecular Therapy Oncolytics (MTO, Official Journal of ASGCT, Cell Press)

CF33 Oncolytic Virus
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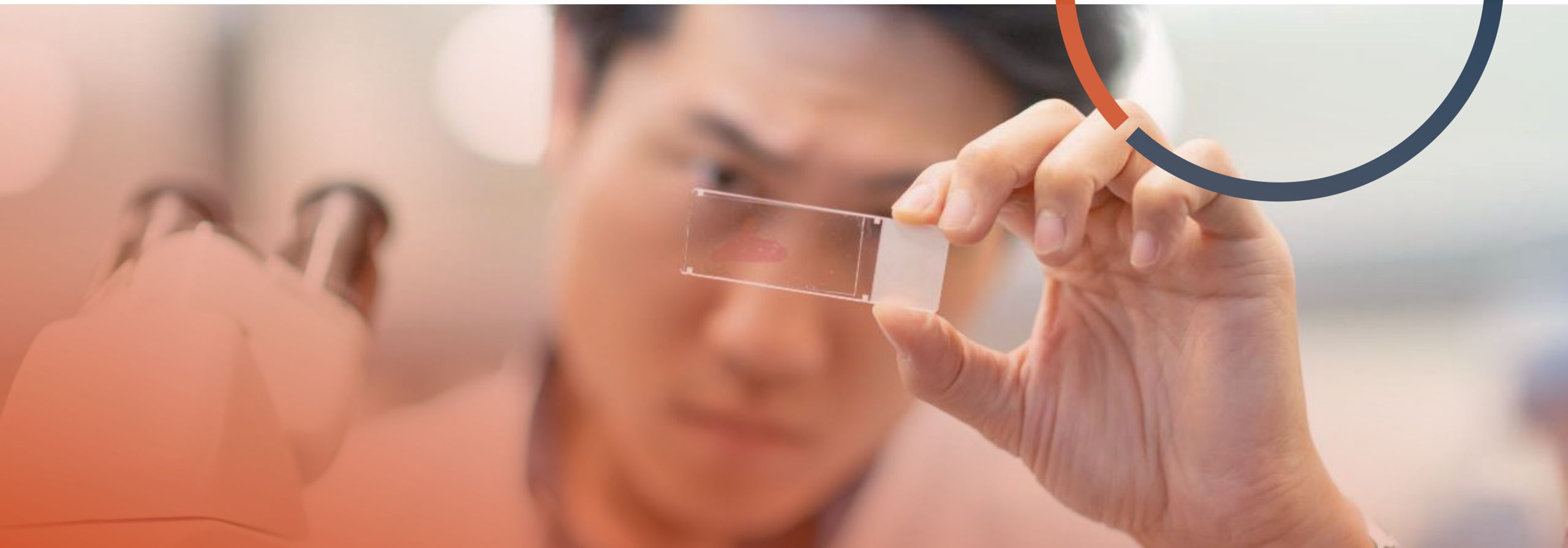
CF33 ONCOLYTIC VIRUS



ONCOLYTIC VIRUSES

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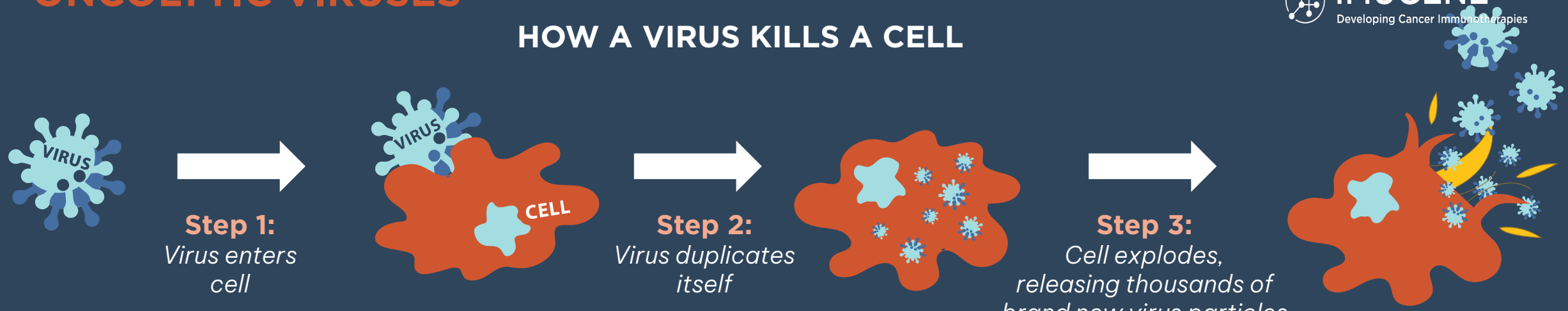
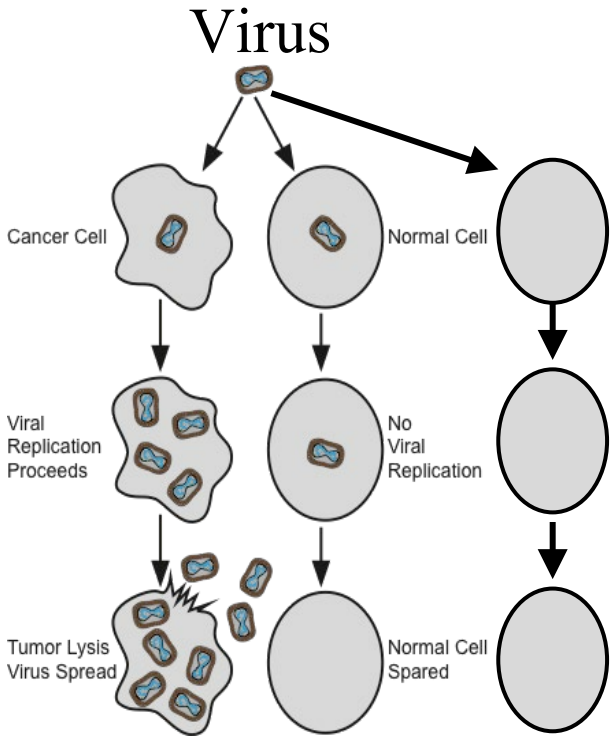
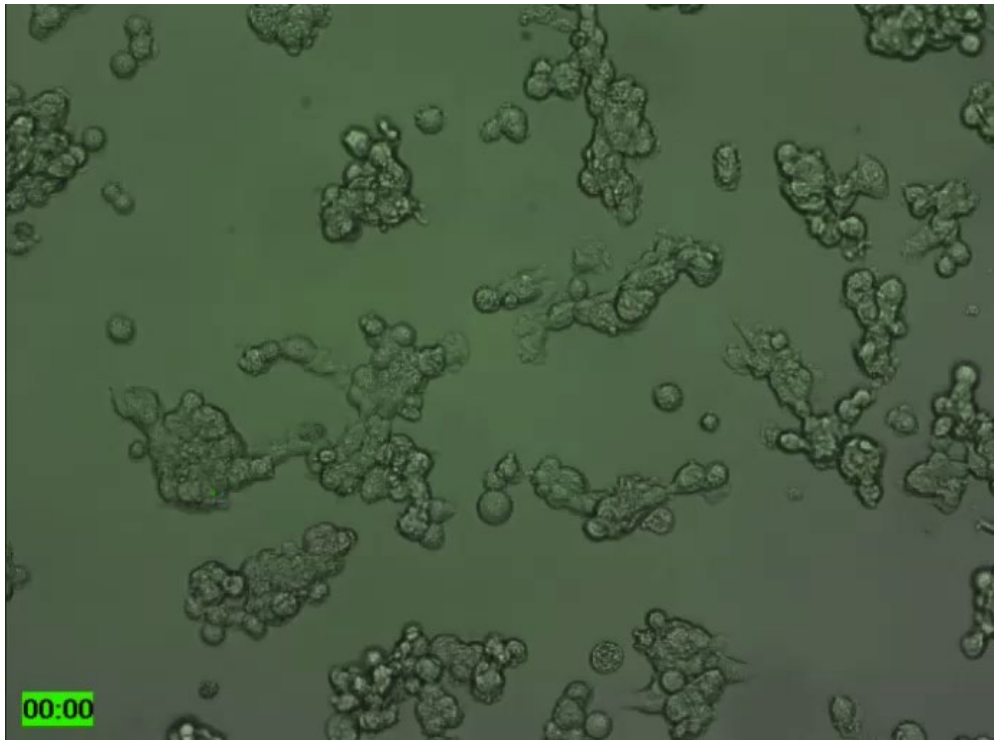
HOW A VIRUS KILLS A CELL







ONCOLYTIC VIRUSES ARE GREAT CANCER KILLING AGENTS

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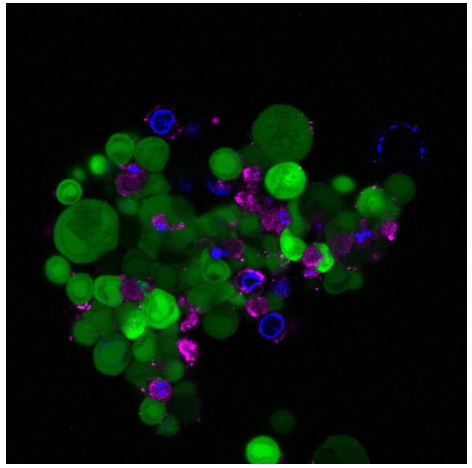
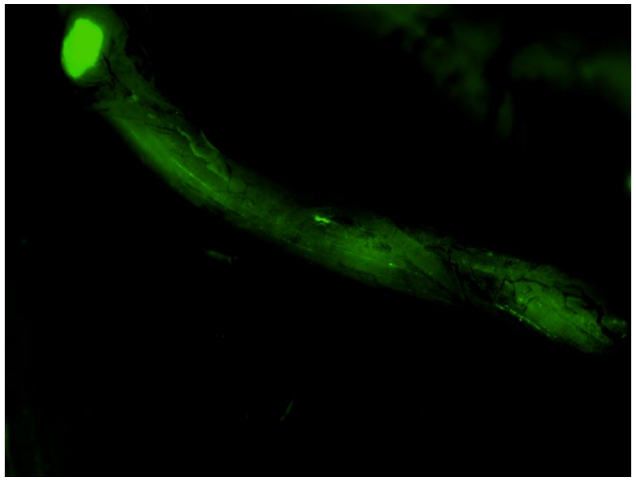
Can infect and kill cancer stem cells

Can infect tumour cells invaded into nerves and restore function

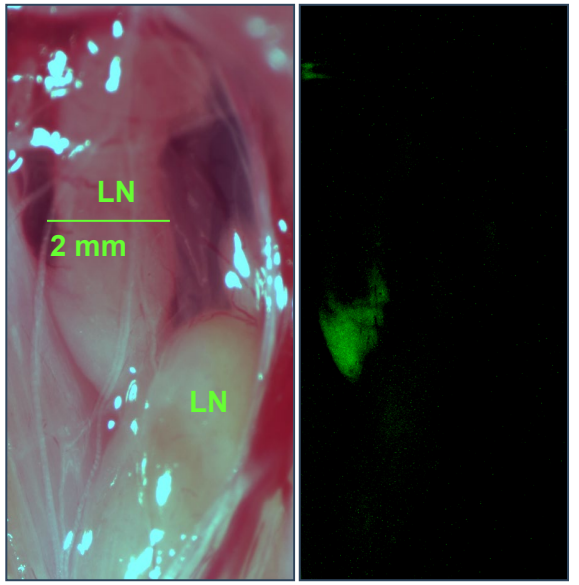
Can travel along lymphatic vessels and kill cancer



Mol Ther Oncolytics, 3:16013, 2016



J Natl Cancer Inst, 102: 107, 2010



PLoS ONE 4: e4789, 2009

ONCOLYTIC VIRUS CAN TRANSFORM IMMUNOLOGICALLY COLD TUMOURS TO HOT TUMOURS; COMBINATION WITH CPI'S

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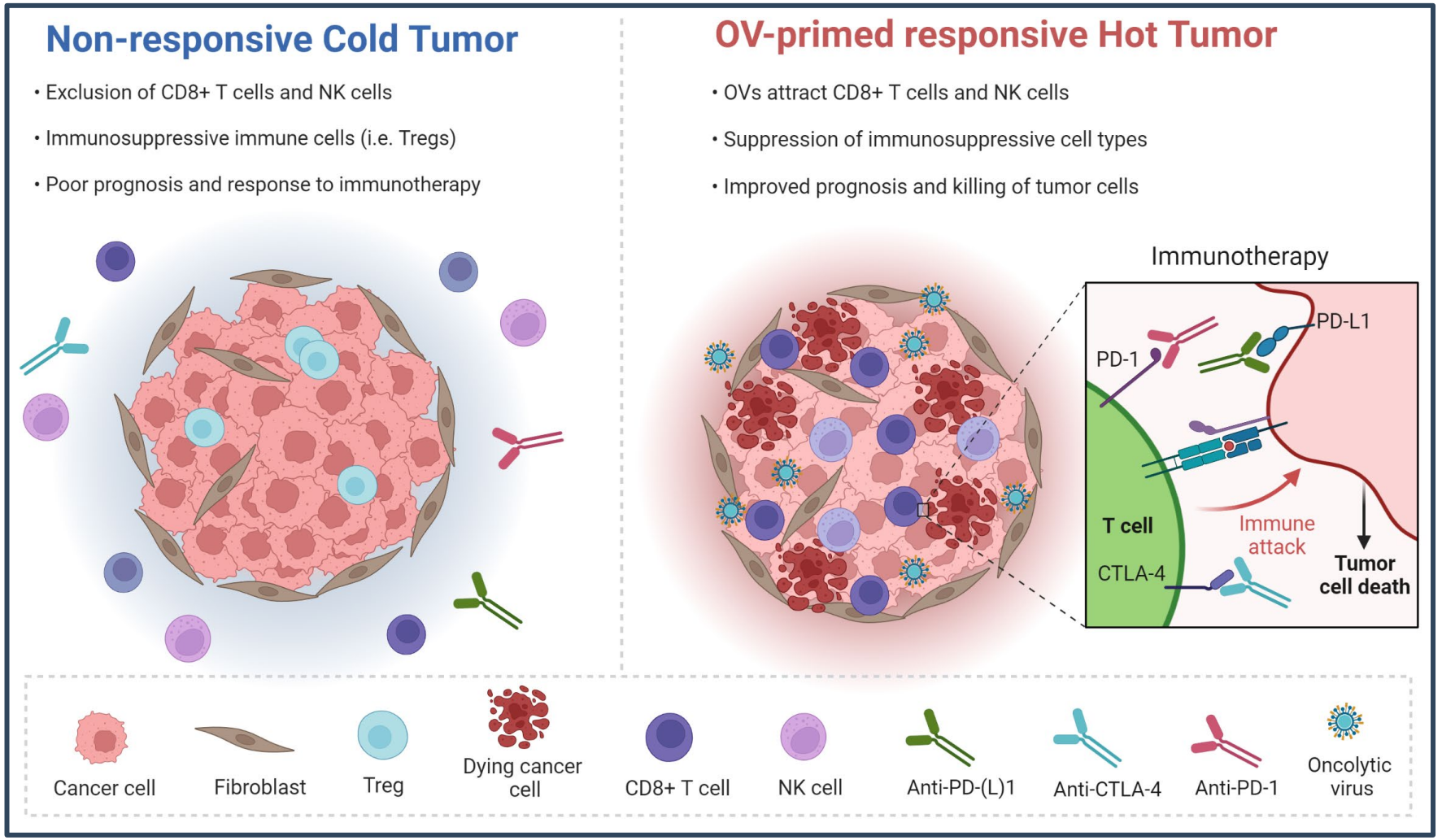
Methods of cancer cell killing

- Direct Lysis
- Immuno-activation



T-Vec (Oncovec^{GM-CSF}) OPTiM Trial
Phase III : T-Vec intratumoural versus SQ GM-CSF

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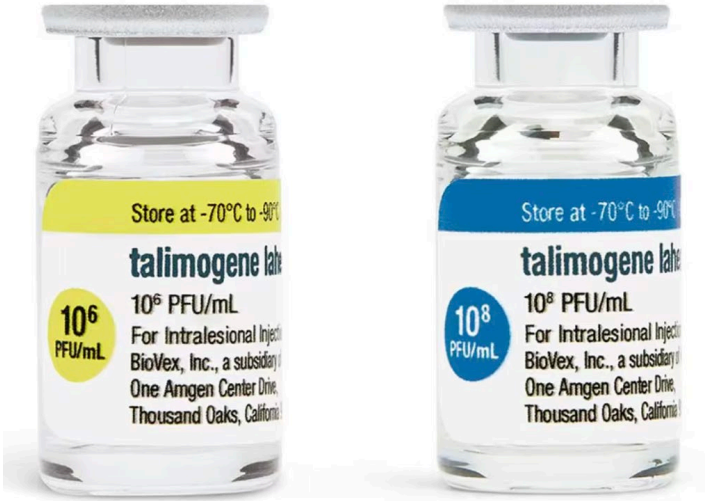
T-Vec was the first FDA approved OV therapy

- Herpes simplex virus encoding hGM-CSF
- N=430
- Stage IIIB, IIIC, IV melanoma

	T-Vec	GM-CSF
Objective Response Rate (ORR)	26%	6%
• Complete Response (CR)	11%	<1%
• Partial Response (PR)	15%	5%
Median Overall Survival (OS) months	23.3	18.9



Andtbacka et al.; J Clin Oncol. 2015;33:2780-2788.

LAST GENERATION ONCOLYTIC VIRUSES

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PRODUCT	TARGET/VIRUS	COMPANY	DEVELOPMENT PHASE & KEY RESULTS
	Squamous cell carcinoma of the head and	Sunway	Approved in China
		Amgen	Approved in USA
P	nia	SillaJen	Phase III
	d and	Oncolytics Biotech	Phase III
CAVATAK™	Melanoma/ Coxsackie A21		
ColoAd1	Solid tumours/Ad		
SEPREHVIR	Malignant Pleural Mesothelioma/HSV	VIRTTU	Phase I/IIa
GL-ONC1	Ovarian cancer/vaccinia	Genelux	Phase I

Too worried about toxicity
- Made viruses too attenuated
- Trial path too slow
  - Single dose, multiple dose, combination Rx

- Running out of IP
- Too expensive to deliver
- Poor efficacy

CF33 Oncolytic Virus

- 2014- moved to City of Hope Cancer Center
- Robust research and trials infra-structure
- GMP Productions Facility
- Phase 1-2 Trials Unit
- History of Academic-Industrial Partnership

MAJOR ADVANTAGES OF VAXINIA CF33

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Robust Efficacy	Highly potent cancer killing Converts 'cold' tumours to responsive 'warm' tumours Direct intra-tumour and systemic anti-tumour activity
Well-Tolerated	Large therapeutic window Genetically stable Combinability with targeted therapies
Broad Application	tumour agnostic approach IT, IV or IP administration with potential to multi-dose Combination approaches
Scalability	Made in high titers Storage stability Clinically stable after mixing

GENERATION & EVALUATION OF NOVEL CHIMERIC POXVIRUSES

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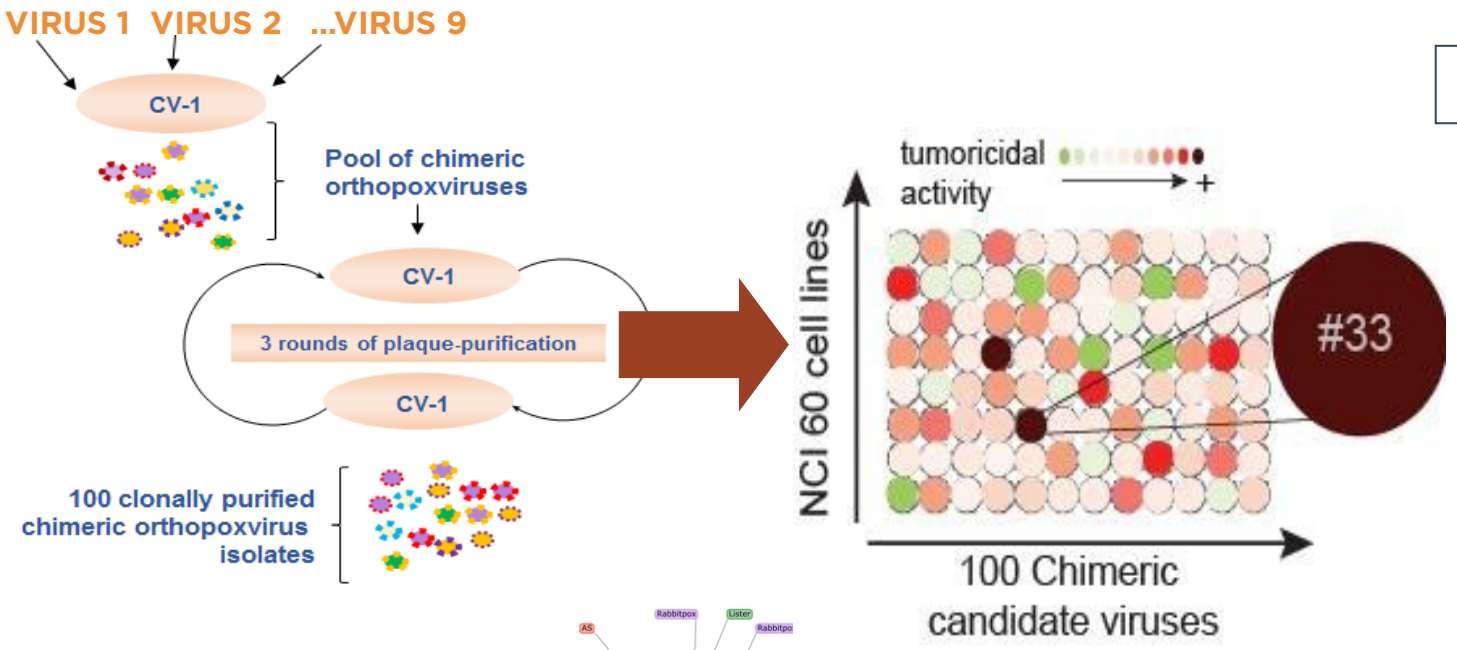

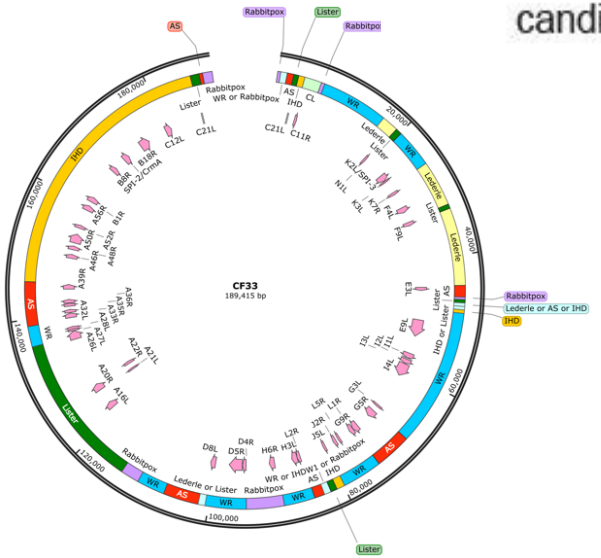

STRATEGY

Engineer Novel Chimeric Viruses

High Through-put Screening for Efficacy Against NCI60

Safe in Animals

Goal: safe, highly potent virus for killing of any cancer

Hope Oncolytic Viruses (HOV)

COMPELLING KILLING OF MANY TUMOUR TYPES AT LOW DOSES

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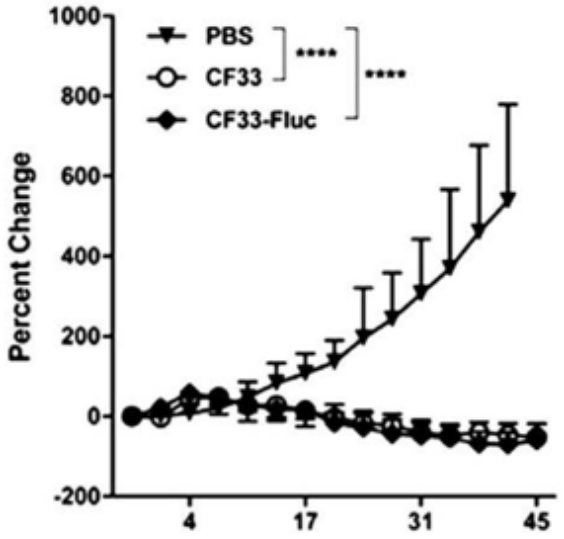
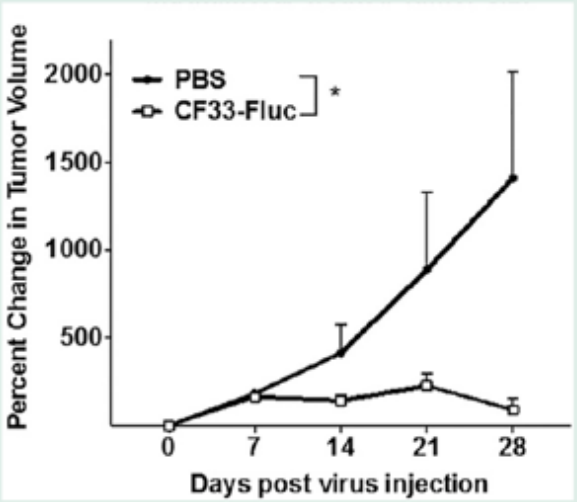
PANCREATIC



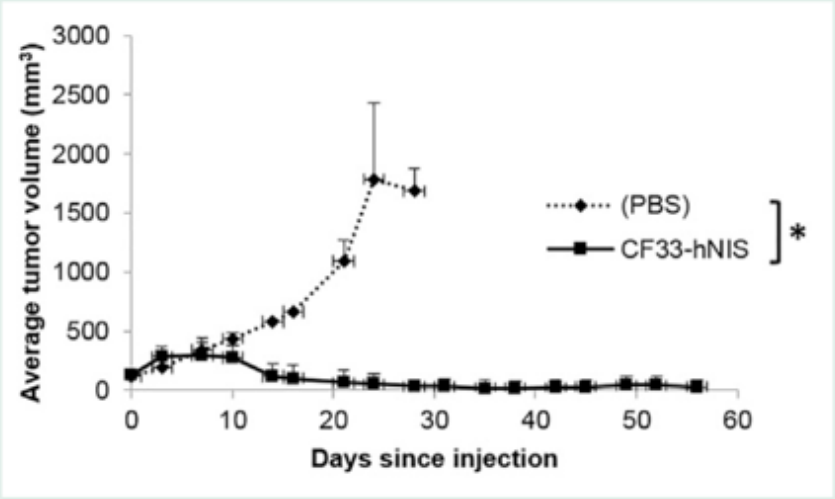
J Transl Med. 2018, 16, 110

COLORECTAL



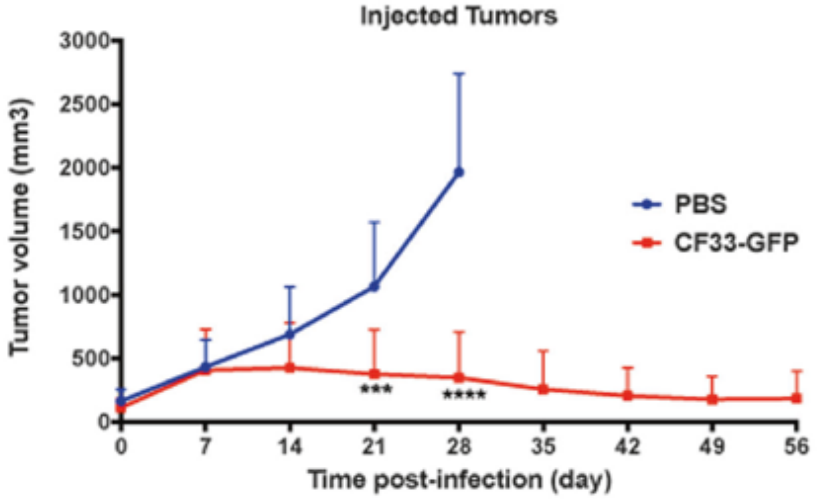
Mol Ther Oncolytics. 2018, 9, 13

COLON



Mol Ther Oncolytics. 2019, 13, 82

LUNG



Cancer Gene Ther. 2019

SAFELY DELIVERED IT, IP, IV WITH LARGE THERAPEUTIC INDEX

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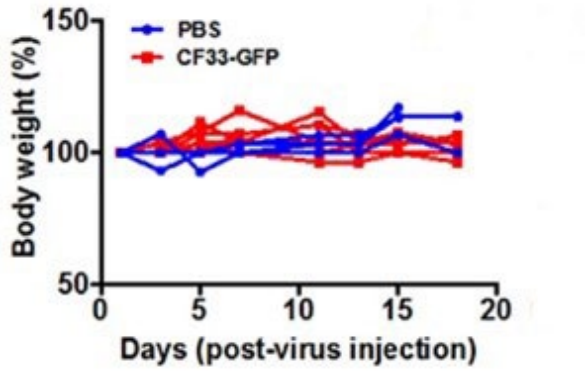
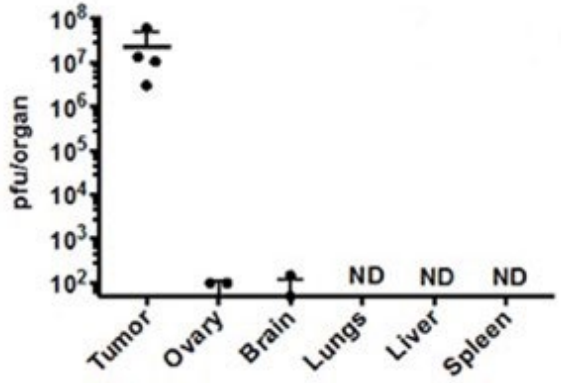
- In many tumour models, animals cured with a single injection of 1000 pfu
- NO TOXICITY UNTIL OVER 10^9
- Virus restricted to tumour
- 6 log therapeutic index





VIRUS	MOUSE	# OF MICE	DOSE	DELIVERY	TOXICITY
CF33-NIS	Nude	73	1e3-1e5	IT	No findings
CF33-miR	Nude	41	1e3-1e5	IT	No findings
CF33-Luc	Nude NSG	48 8	1e3-2e5 1e6	IT, IV & IP IT	No findings
CF33-GFP	Nude NSG	18 8	1e3-2e7 1e6	IT IT	No findings
CF33-hNIS-αPDL1	Nude Black/6 BALB/c	52 67 31	1e4 1e5-1e8 1e7	IT IT & IV (1e6) IT & IV	No findings
CF33-hNIS-Δ14.5	Nude Black/6 BALB/c	36 16 16	1e4 1e6 – 1e8 1e7-3e7	IT IT IT & IV (2e7)	No findings
CF33-CD19	NSG	288	1e6-1e8	IT	No findings

TUMOUR MICROENVIRONMENT – IMMUNOGENIC AND IMMUNOSUPPRESSIVE COMPONENTS

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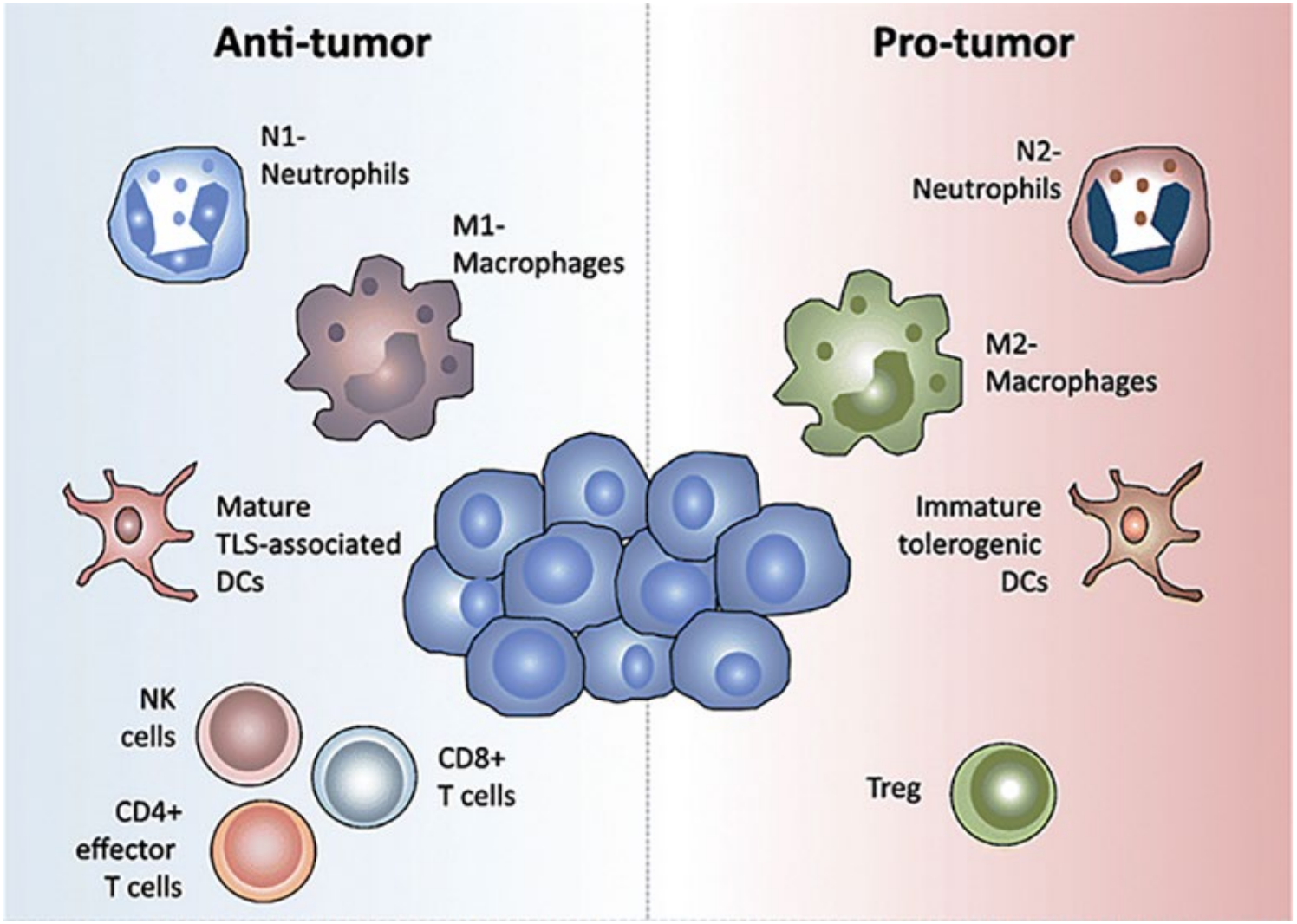
Direct lysis of cancers



CF33 Effects

- Enhances expression of check-point targets to enhance activity of CPI
- Helps antigen presentation cells to establish long-lasting immunity
- Recruits to tumour sites CD8+, CD4+, and NK cells
- Kills M2-macrophages

CHECKvacc PHASE 1 TNBC IST
City Of Hope – DR RAND

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FDA U.S. FOOD & DRUG ADMINISTRATION

Metastatic Triple Negative Breast Cancer

-2 prior lines of treatment

COHORT 6 | 3-6 PATIENTS

COHORT 5 | 3-6 PATIENTS

COHORT 4 | 3-6 PATIENTS
$1x10^7$

COHORTS 1 ,2 &3 | 3-6 PATIENTS
(each) $1x10^5$, $3x10^5$, $1x10^6$

Identify:

Optimal Biological Dose (OBD)

Based on:

- Safety
- Immunogenicity
- Tumour Response

OBD Expansion

12 Patients

MAST: VAXINIA PHASE 1 METASTATIC ADVANCED SOLID TUMOURS STUDY

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FDA U.S. FOOD & DRUG ADMINISTRATION

Dose Administration (Parallel Groups)

n=52-100 patients

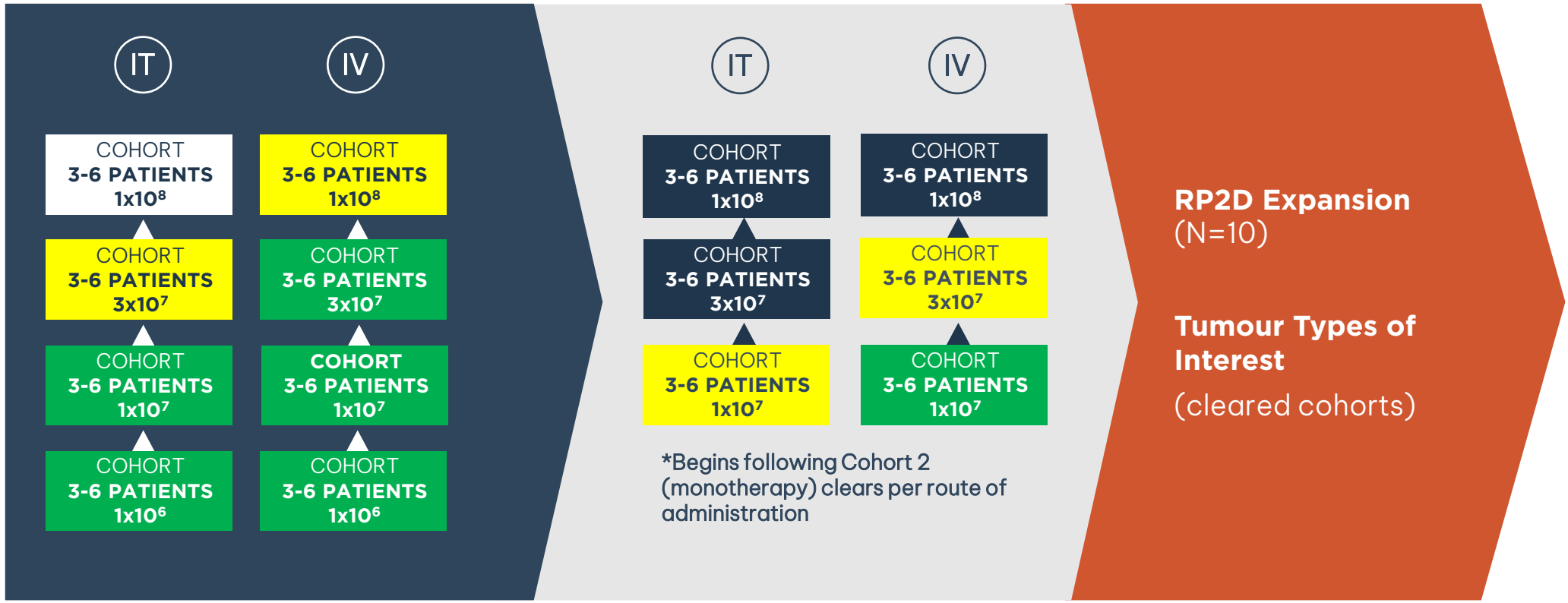
IT

IT Administration
Metastatic and Advanced Solid Tumours

IV

IV Administration
Metastatic and Advanced Solid Tumours

Site Location: USA, AUS



First Patient Enrolled May 2022

Identify: Recommended Phase 2 Dose (RP2D) – Monotherapy and Combination
Based on: Safety, Immunogenicity, Tumour Response

onCARlytics
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onCAR19 FOR SOLID TUMOURS

WHAT IS CAR T THERAPY? – A LIVING DRUG

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CAR T cell therapy is a type of immunotherapy that uses a patient's own genetically modified T Cells to find and kill cancer (think of a 21st Century blood transfusion)

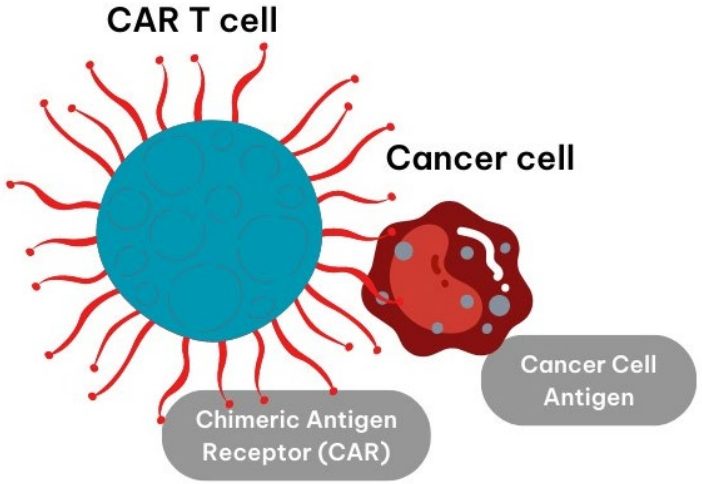
1

T Cells are taken from patients with blood cancers such as leukemia & lymphoma and reprogrammed to target CD19 cancer cells

2

The re-programmed CD 19 T Cells are then injected back into the cancer patient

3



When the CD19 T Cells see the cancer cells with CD19 on them, the T Cells attack and kill them

CAR T THERAPY SUCCESSES IN HEMATOLOGICAL MALIGNANCIES

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BRAND	COMPANY	FIRST FDA APPROVAL	TARGET	APPROVED CANCERS	OVERALL RESPONSE RATE
KYMRIAH® (tisagenlecleucel) Dispersion for IV infusion	NOVARTIS	2017	CD19	B-ALL, DLBCL	53-86%
YESCARTA® (axicabtagene ciloleucel) Suspension for IV infusion	Kite A GILEAD Company	2017	CD19	DLBCL, R/R FL	72-91%
TECARTUS® (brexucabtagene autoleucel) Suspension for IV infusion	Kite A GILEAD Company	2020	CD19	R/R MCL	65*-87%
Breyanzi® (lisocabtagene maraleucel)	Bristol Myers Squibb™	2021	CD19	DLBCL	73-87%
Abecma® (idecabtagene vicleucel)	Bristol Myers Squibb™	2021	BCMA	R/R MM	72%
CARVYKTI™ (ciltacabtagene autoleucel) Suspension for IV infusion	janssen Oncology; LEGEND BIOTECH	2022	BCMA	R/R MM	98%

*Overall complete remission rate

https://www.hcp.novartis.com/products/kymriah/;https://www.yescartahcp.com/;https://www.tecartushcp.com/; https://www.breyanzihcp.com/; https://www.abecmahcp.com/; DLBCL: Diffuse large B cell lymphoma; ALL: Acute lymphoblastic leukaemia; R/R: Relapsed or refractor FL: Follicular lymphoma; MCL: Mantle cell lymphoma; MM: Multiple myeloma

BROAD RANGE OF FDA APPROVED CD19 TARGETED THERAPIES

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MODALITY	BRAND	COMPANY	FIRST FDA APPROVAL	INDICATIONS
CD19 Monoclonal Antibodies (MAb)	MONJUVI® tafasitamab-cxix | 200mg for injection, for intravenous use	morphosys	2020	DLBCL
	uplizna inebilizumab-cdon	HORIZON	2020	NMOSD
CD19-CD3 Bispecific MAbs	BLINCYTO® (blinatumomab) for injection 35 mcg single-dose vial	AMGEN	2014	ALL
CD19 Antibody-drug conjugate (ADC)	Zynlonta® loncastuximab tesirine-lpyl for injection, for intravenous use • 10mg	ADC THERAPEUTICS Innovating Science. Inspiring Hope.	2021	B cell lymphoma

https://www.hcp.novartis.com/products/kymriah/; https://www.yescartahcp.com/;https://www.tecartushcp.com/; https://www.breyanzihcp.com/; https://www.abecmahcp.com/; https://www.monjuvihcp.com/; https://www.upliznahcp.com/; https://www.blincytohcp.com/; https://www.zynlontahcp.com/;
DLBCL: Diffuse large B cell lymphoma; NMOSD: Neuromyelitis optica spectrum disorder; ALL: Acute lymphoblastic leukaemia; FL: Follicular lymphoma; MCL: Mantle cell lymphoma

OBSTACLES FOR TARGETING SOLID TUMOURS WITH CAR-T

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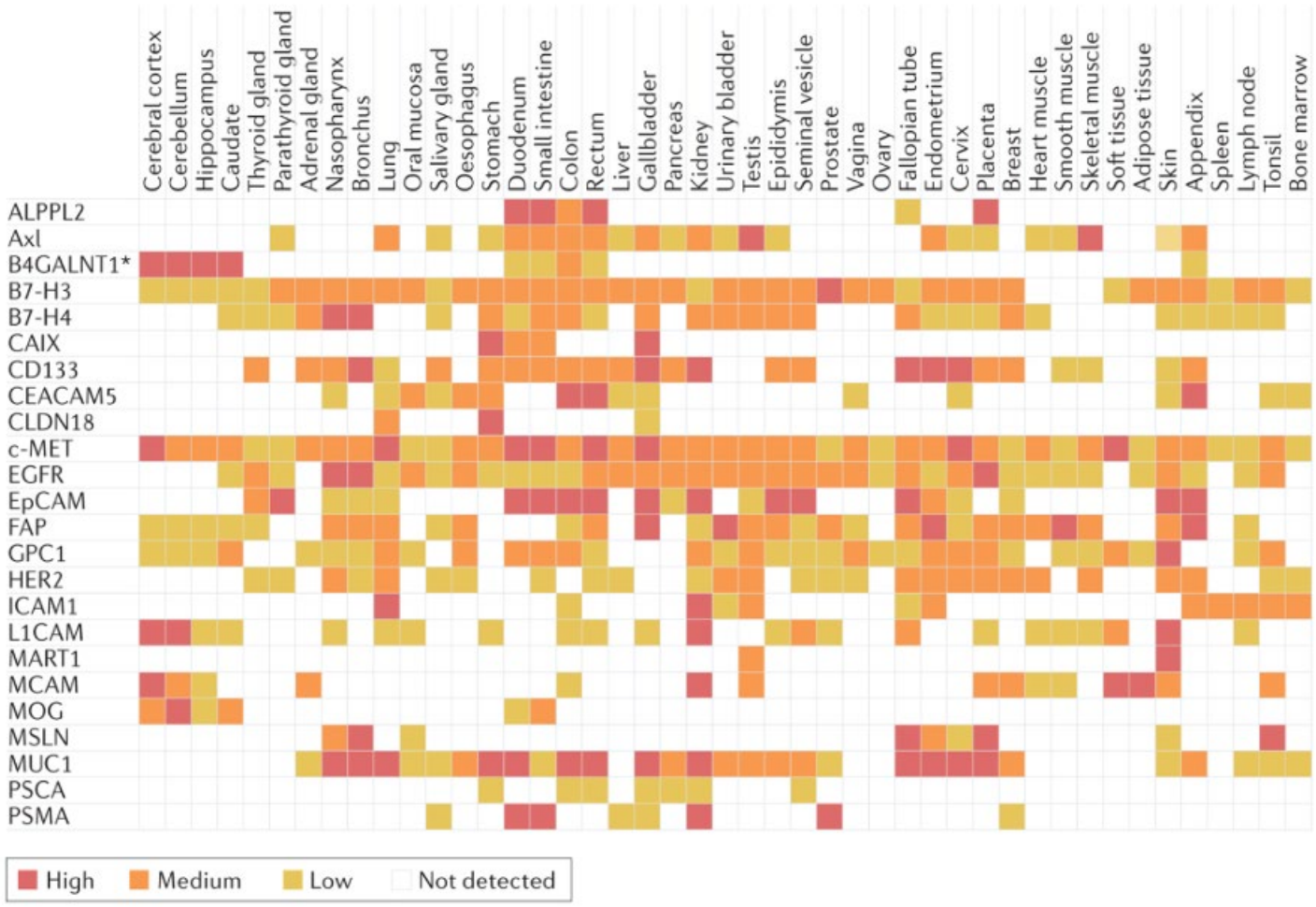

Nat Rev Clin Oncol 20:49, 2023

Many cancer Ag expressed in normal tissues and result in off-tumour, on-target toxicity

- Her-2 — Heart
- CEA — Colon
- PSMA — Intestines, kidney

Many specific cancer proteins are intracellular (e.g. AFP)

OBSTACLES FOR CANCER IMMUNOTHERAPY – TUMOUR HETEROGENEITY

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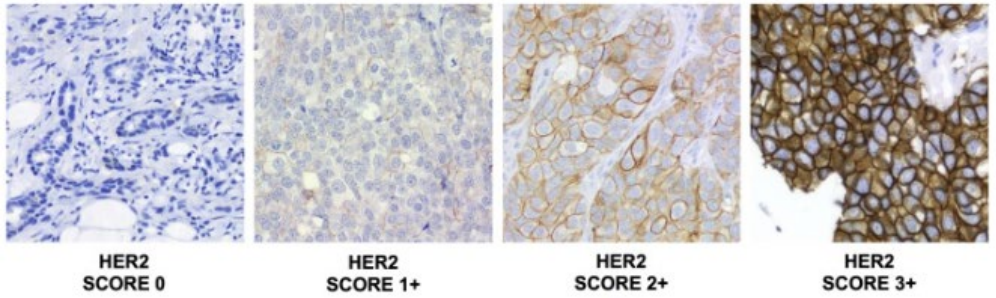
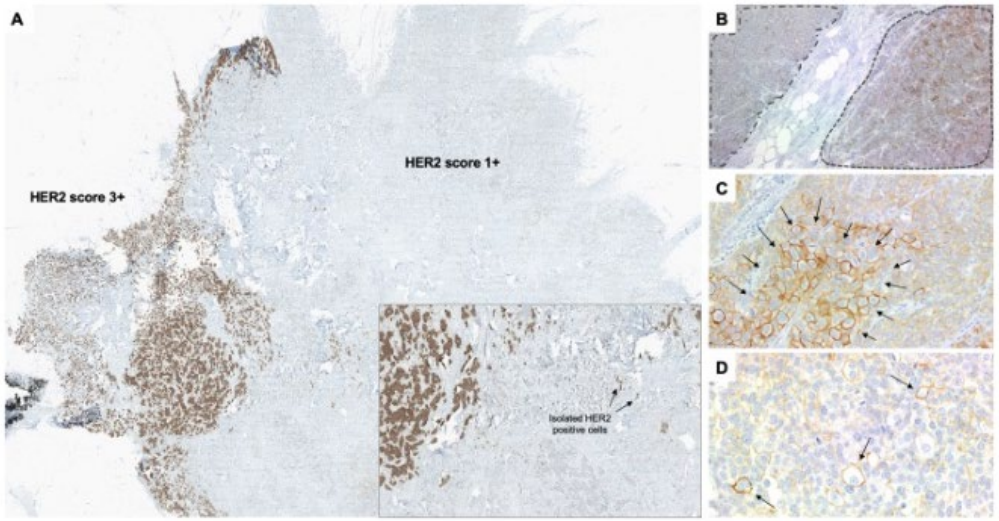
Heterogeneity in tumour Antigen Expression

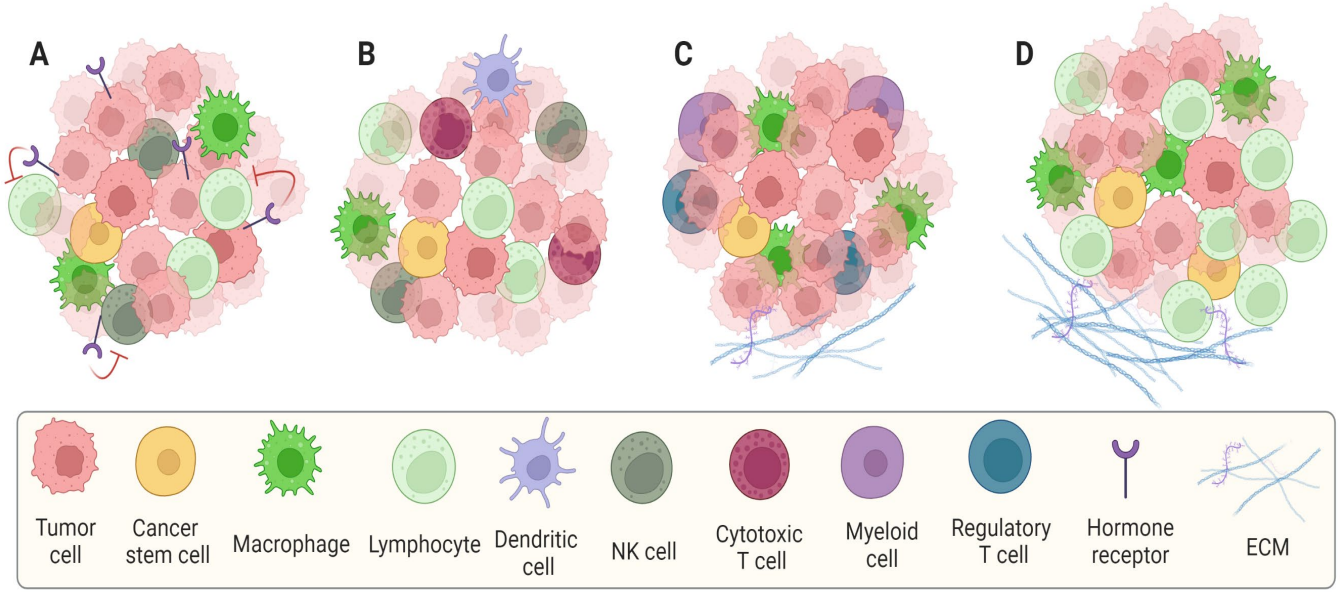




Heterogeneity in tumour Microenvironment

Inter-tumour Heterogeneity

Intra-tumour Heterogeneity



CHALLENGES LIMITING USE OF CAR T THERAPIES FOR SOLID TUMOURS

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TUMOUR ANTIGEN HETEROGENEITY	LOSS OF ACTIVITY	POOR PENETRATION	HIGHLY IMMUNOSUPPRESSIVE
No common, abundant surface protein to target	CAR T therapies loose function after chronic stimulation	Inefficient trafficking and infiltration into tumour tissue	Tumour microenvironment suppresses T cell activity

Chen, Lei et al.; Current progress in CAR-T cell therapy for tumour treatment; ONCOLOGY LETTERS 24: 358, 2022; DOI: 10.3892/ol.2022.13478; Marofi et al. Stem Cell Research & Therapy (2021) 12:81

onCARlytics MAKE SOLID TUMOURS "SEEN" BY CD19 TARGETING THERAPIES

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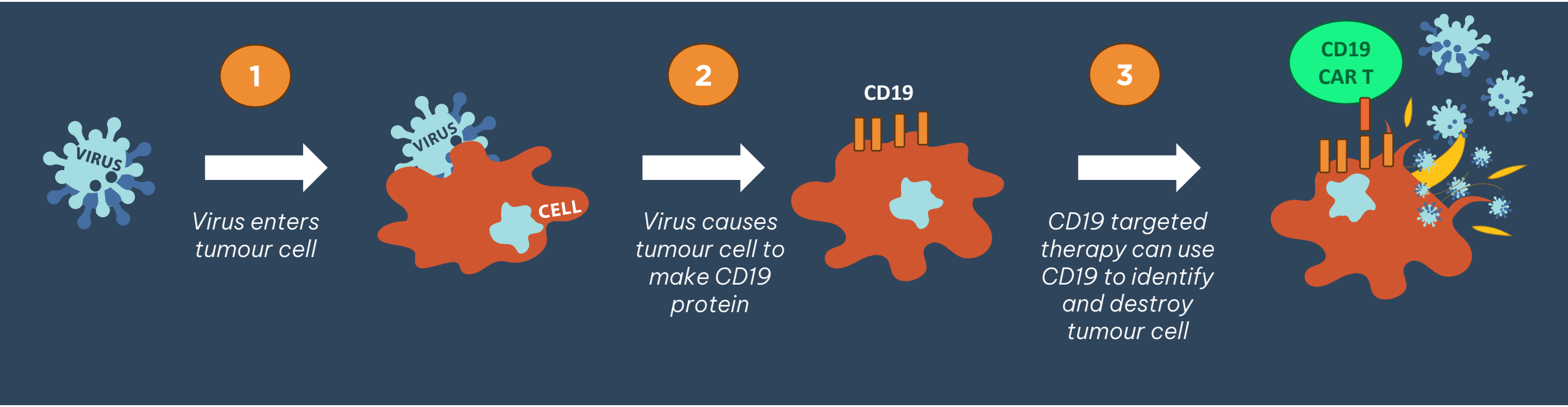
- CD19 is commonly expressed in blood cancers and is used with targeted therapies like CAR Ts to identify and kill tumour cells in a homogeneous manner
- Solid tumour cells don't have a common, abundant protein on their surface for targeting
- onCARlytics allows for CD19 to be expressed on solid tumour cells
- Ability to use any CD19 targeting agent to kill CD19 expressing solid tumours
- Large, unmet medical need for patients with solid tumours



onCARlytics DELIVERS CAR TARGETS TO "TARGETLESS" SOLID TUMOURS

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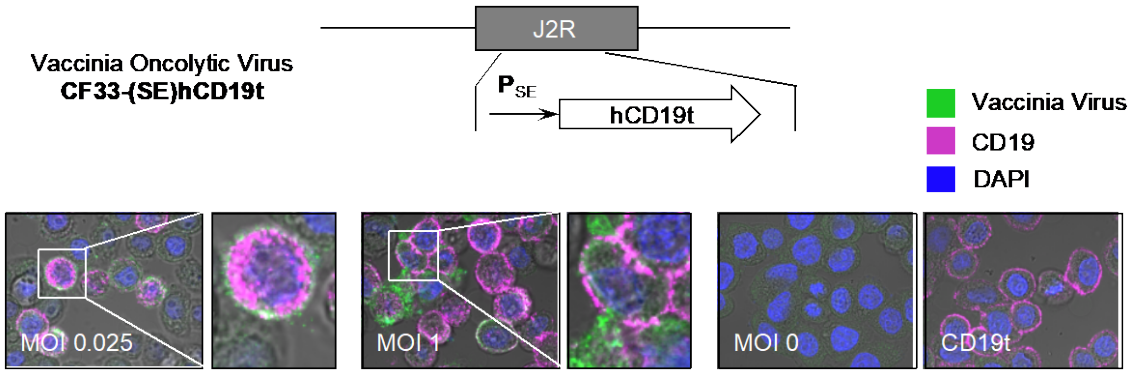
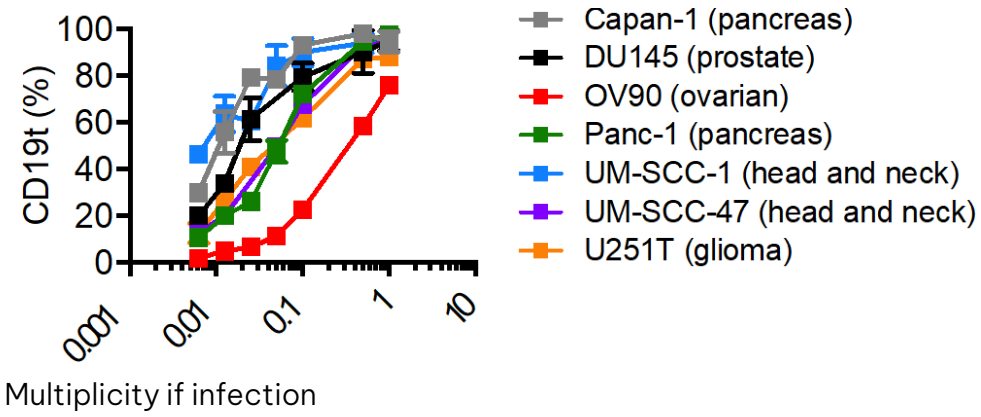
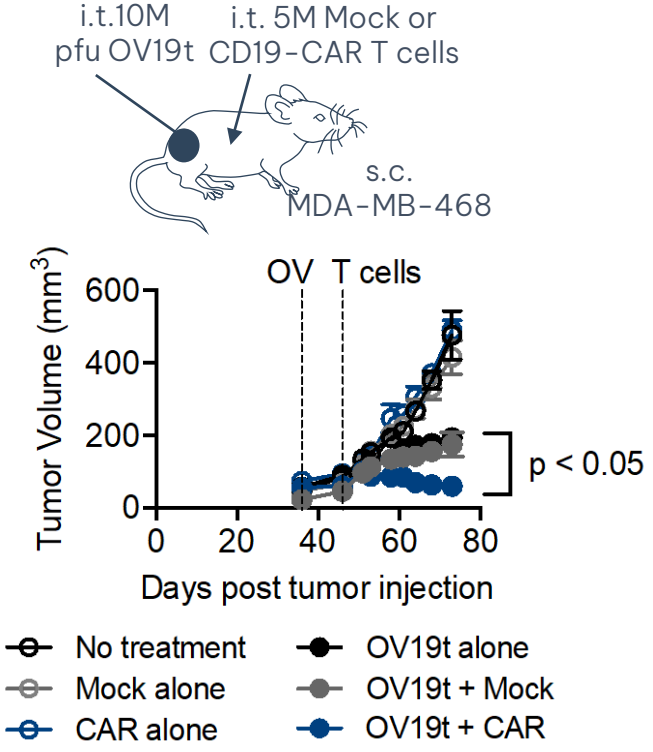


onCARlytics (CF33-CD19) infects a wide array of solid tumour cell lines, with dose-dependent CD19 cell surface expression



Combination of onCARlytics (CF33-CD19) and CD19-CAR T cells promotes tumour regression in xenograft model of TNBC



Park et al. *Science Translational Medicine* 2020

onCARlytics COMBINATION WITH CD19 TARGETING THERAPIES

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Collaboration with Celularity, Eureka and Arovella for combination with onCARlytics

AUG 2021

Strategic Partnership with Celularity

celularity

Allogeneic CyCART19® T cells

NOV 2021

Strategic Partnership with Eureka

EUREKA THERAPEUTICS

Autologous ARTEMIS® **T cells**

SEP 2022

Strategic Partnership with Arovella

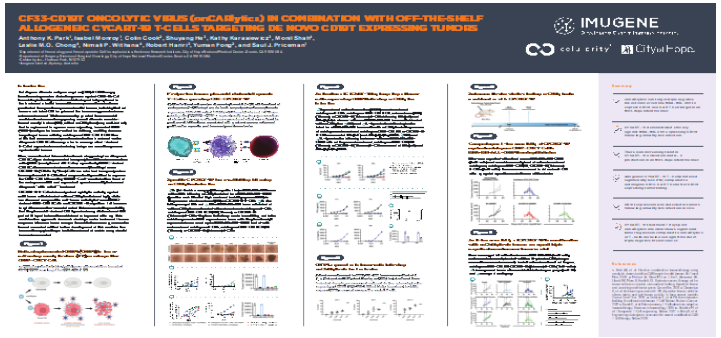
arovella THERAPEUTICS

Allogeneic invariant natural killer (iNKT) cells

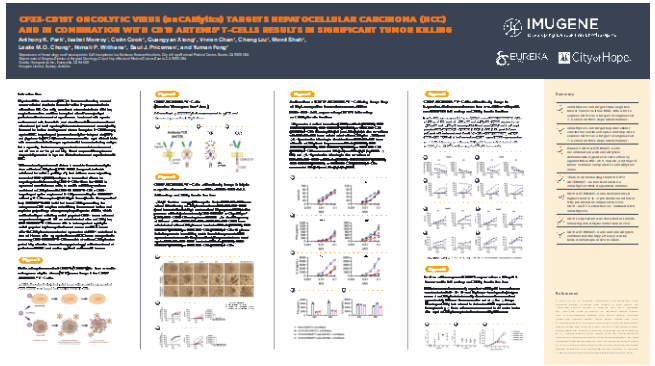
sitc
Society for Immunotherapy of Cancer

3 POSTERS PRESENTED AT SITC 2022

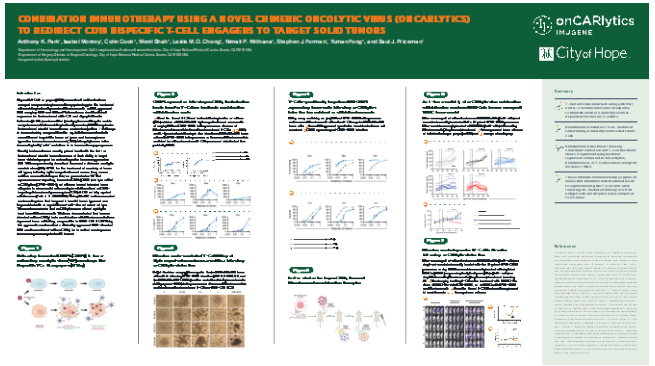
CyCART19® celularity



Artemis® EUREKA THERAPEUTICS



BLINCYTO® (blinatumomab) for injection 35 mcg single-dose vial



onCAR19 (CF33-CD19) PHASE 1 OASIS STUDY
(Metastatic Advanced Solid Tumours)

FDA U.S. FOOD & DRUG ADMINISTRATION

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Dose Administration (Parallel Groups)

n=~52

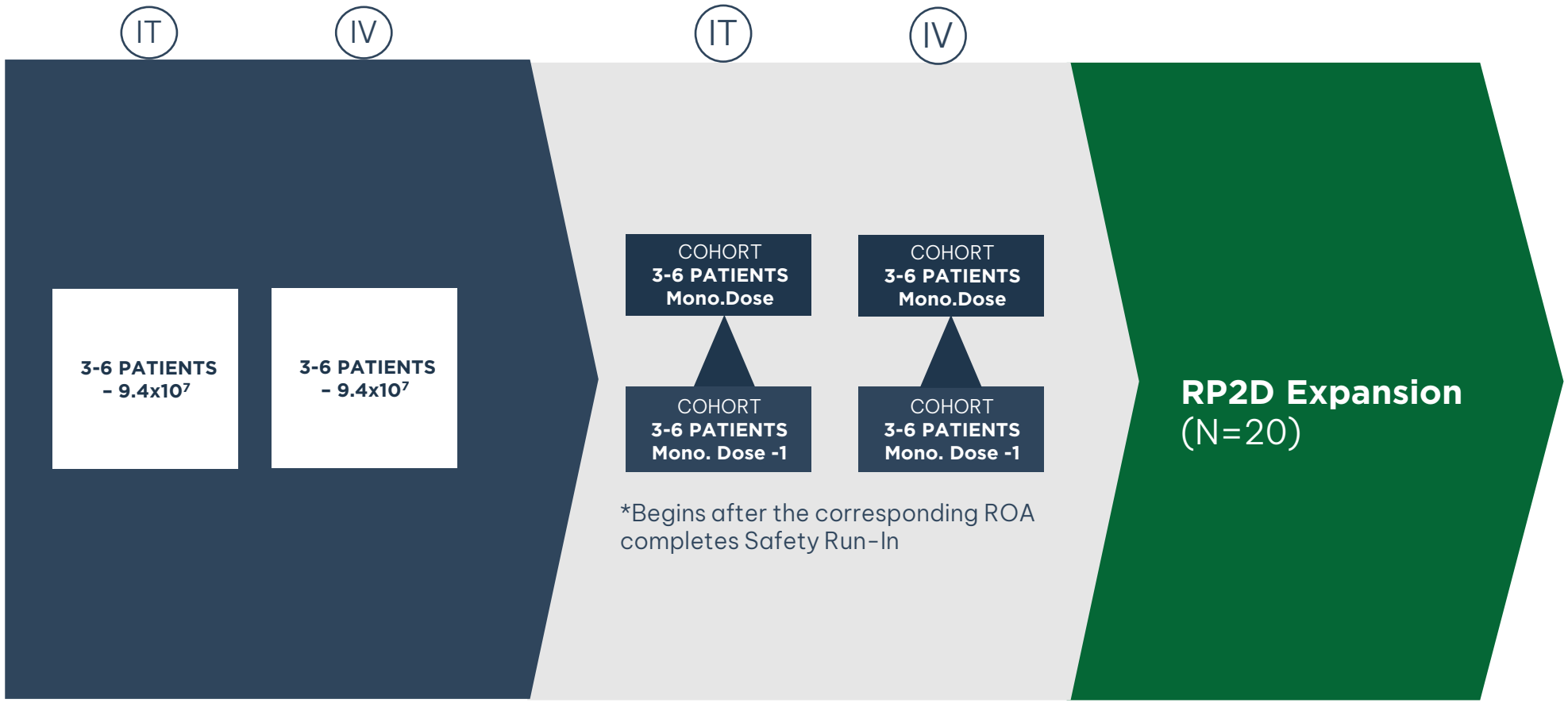
IT

IT Administration
Metastatic and Advanced Solid Tumours

IV

IV Administration
Metastatic and Advanced Solid tumours

Site Location: USA



First Patient Enrolled 2H 2023

Identify: Recommended Phase 2 Dose (RP2D) – Monotherapy and Combination
Based on: Safety, Immunogenicity, Tumour Response

CF33- FUTURE DIRECTIONS

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Universal platform for tumour targeting

Potential for becoming enabler for universal Car-T therapy

Likely to expand market for CPI, Car-T, T-cell engagers, ADCs

Transgenes for enhancing T-cell survival and expansion

New targets for synergistic actions with engineered cells (Car-T, NK-Car), Bispecific T-cell engagers, ADCs
Goal: No off-tumour or off-target effects

WHY IMUGENE?

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DIVERSE ASSET PORTFOLIO WITH MULTIPLE SHOTS ON GOAL ACROSS THREE NOVEL PLATFORMS

EXPERIENCED MANAGEMENT TEAM

ONGOING CLINICAL TRIALS IN DIVERSE SOLID TUMOURS WITH MULTIPLE VALUE INFLECTION POINTS

ROBUST CASH RUNWAY WITH FUNDING THROUGH KEY MILESTONES

MULTIPLE VALUE REALISATION PATHWAYS

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COMPANY AQUISITION

PARTNER WITH BIG PHARMA

LICENSE TECHNOLOGIES SEPARATELY

VALUE INFLECTION POINTS EXPECTED IN THE NEXT 12 MONTHS

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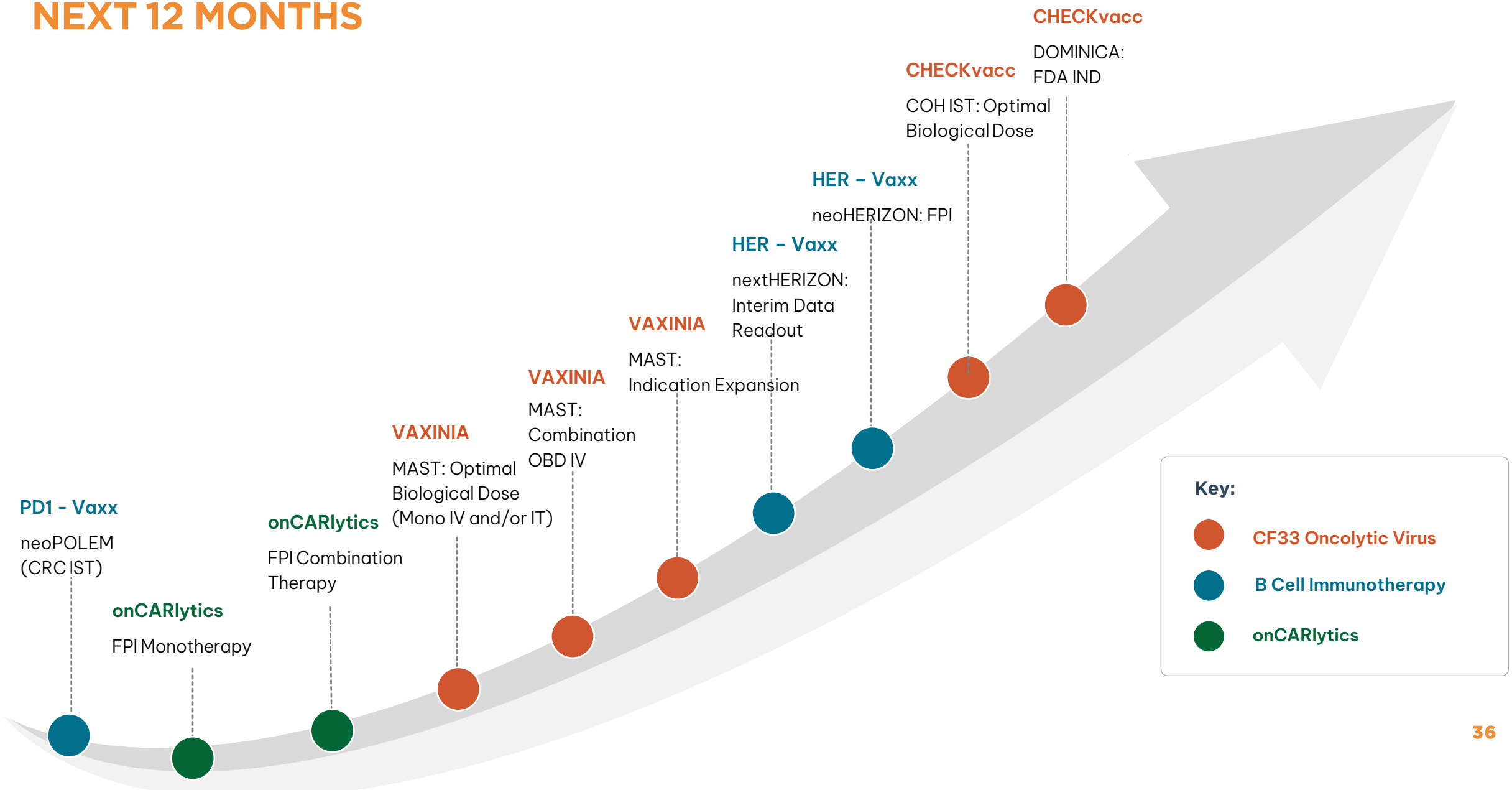

FINANCIAL SUMMARY

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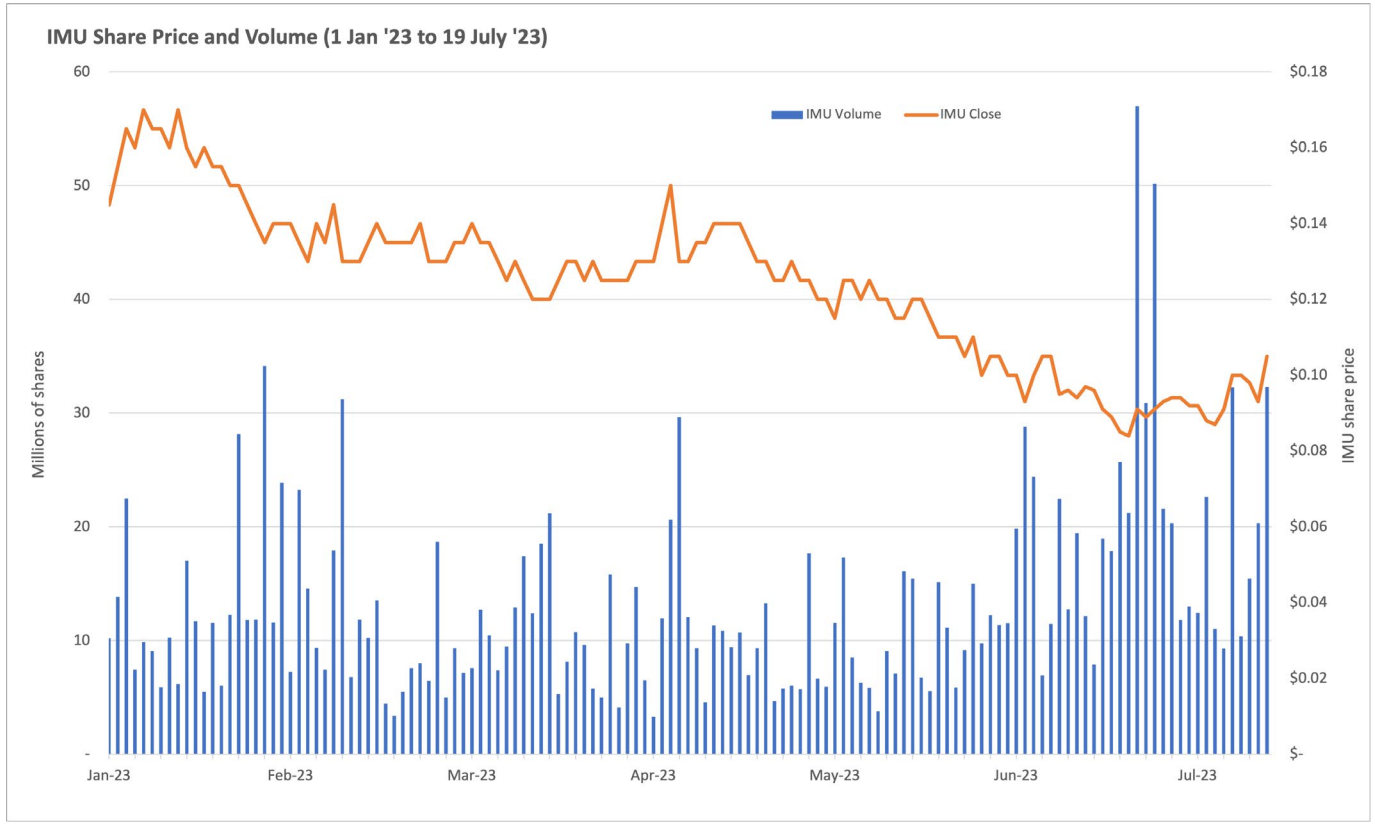
PUBLIC MARKET OVERVIEW (July 19, 2023)

Share Price	A$0.105
52 week range	A$0.082 - A$0.315
Market Capitalisation[1]	A$674M
Cash equivalents (31 March '23)	A$152M
Enterprise Value	A$522M

TOP 5 SHAREHOLDERS (May 24, 2023)

Paul Hopper	4.94%
The Vanguard Group Inc.	4.76%
Mann Family	4.60%
State Street Corporation	2.53%
Black Rock Inc.	2.42%

SHARE PRICE PERFORMANCE



Note:
1. Market capitalisation calculations based on ordinary shares (6.423 bn) only and excludes the dilutive impact of options outstanding (0.477 bn)

Contact

shareholderenquiries@imugene.com
www.imugene.com

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ASX: IMU